

REMARKS

Pursuant to the present amendment, claim 17 has been canceled, and new claim 107 has been added. Thus, claims 1-16, 18-68 and 107 are pending in the present application. Claims 69-106 have been withdrawn from consideration. No new matter has been introduced by way of the present amendment. Reconsideration of the present application is respectfully requested in view of the amendments and arguments set forth herein.

In the Office Action, claims 1-3, 8-12, 23-25 and 27-31 were rejected under 35 U.S.C. § 102 as allegedly being anticipated by Dietze (U.S. Patent No. 6,284,986). Claims 4, 5-7, 13-16, 18-22 and 26 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Dietze in view of Lynch (U.S. Patent No. 6,050,138). Applicants respectfully traverse the Examiner's rejections.

As an initial matter, claims 32-68 were allowed. Claim 17 was objected to but indicated to be allowable if rewritten in independent form. Pursuant to the present amendment, new claim 107 is added to re-present dependent claim 17 in independent form. Thus, it is believed that claims 32-68 and 107 are in condition for immediate allowance. Moreover, it should be understood that, by re-presenting dependent claim 17 in independent form, via new claim 107, no issues related to prosecution history estoppel are believed to arise with respect to new claim 107.

As the Examiner well knows, an anticipating reference by definition must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). To the extent the Examiner relies on principles of inherency in making the anticipation rejections in the Office Action, inherency requires that the asserted proposition necessarily flow from the disclosure. *In re Oelrich*, 212

U.S.P.Q. 323, 326 (C.C.P.A. 1981); *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1463-64 (Bd. Pat. App. & Int. 1990); *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Int. 1987); *In re King*, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986). It is not enough that a reference could have, should have, or would have been used as the claimed invention. "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Oelrich*, at 326, quoting *Hansgörg v. Kemmer*, 40 U.S.P.Q. 665, 667 (C.C.P.A. 1939); *In re Rijckaert*, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993), quoting *Oelrich*, at 326; see also *Skinner*, at 1789. "Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Skinner*, at 1789, citing *Oelrich*. Where anticipation is found through inherency, the Office's burden of establishing prima facie anticipation includes the burden of providing "...some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art." *Skinner* at 1789.

Moreover, as the Examiner well knows, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is

nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

Applying the above legal standards, it is respectfully submitted that the Examiner erred in rejecting claims 1-16 and 18-31 of the present application. As an initial matter, at least as understood by the undersigned, it is believed that the reference to Dietze is fundamentally different from the inventions set forth in pending claims 1-16 and 18-31. More specifically, independent claims 1, 13 and 23 require, among other things, controlling at least one parameter of a deposition process based upon the determined or calculated mass of the process layer that is deposited. Of course, the Examiner will have to consult each of the claims for the exact wording of such limitations.

It is respectfully submitted that at no point does Dietze disclose such a control methodology. Dietze does determine the mass or weight of the substrate before and after a layer is formed; however, Dietze does not disclose any activity whereby any aspect of the deposition process is controlled based upon this determined weight or mass. The Examiner refers to column 3, lines 55-60, and Figure 3 of Dietze as support for such limitations. However, in the cited passage, Dietze discloses that the thickness and uniformity of a first or test layer is determined for a given deposition process. Col. 3, ll. 58-59. Dietze notes that this step may be accomplished by depositing the test layer on a test substrate using the deposition process and measuring the thickness and uniformity of the test layer using FTIR or other known measuring methods. Col. 3, ll. 59-62. According to Dietze, it is expected that layers of similar thickness and uniformity will be deposited on other substrates subjected to the same deposition process. Dietze then notes that the mass of the test layer is determined using the method previously described. Dietze also notes that it is expected that a layer having a thickness and uniformity similar to that of the test layer will have a mass substantially the same as the mass of the test layer. Col. 3, l. 66 – Col. 4, l. 2. Dietze further notes that it is also expected that there will be an acceptable range or variation in the mass of other layers deposited on the substrate by the same deposition process. Col. 4, ll. 2-5. Therefore, in Dietze, a range of tolerances of acceptable layer masses is established by calculation or by weighing multiple test substrates and experimentally determining an acceptable mass variation for the test layers. Col. 4, ll. 5-9. According to Dietze, once these steps have been performed:

“layers are deposited on other substrates and the masses of those layers are determined using the previously described method. If the mass of a second layer deposited on a second substrate is within the range of tolerances set in step 116, the thickness and uniformity of the second layer is determined to be acceptable, and the second substrate is permitted to continue in the semiconductor manufacturing process. This determination is shown in steps

118 and 120 [of Figure 3]. However, if the mass of the second is not within the range of tolerances, it is presumed that the thickness and/or uniformity of the second layer are not acceptable. In step 122 [of Figure 3], the second layer is subjected to further analysis by FTIR or other known measurement methods to determine how the thickness and/or uniformity of the second layer varies from expected values. In this manner, the mass of a layer serves as an indicator or 'flag' that checks the acceptability of the thickness and uniformity of the layer."

Col. 4, ll. 14-27 (emphasis added).

As thus understood, Dietze discloses a method of determining whether acceptable layers have been deposited on a substrate based upon the weight or mass of the layers falling within pre-established tolerances for such layers, wherein the tolerances were developed based upon one or more test wafers. At no point does Dietze disclose any aspect of, with respect to claim 1, controlling at least one parameter of the deposition process based upon the determined weight or mass of the process layer. Dietze is simply silent on this point. Dietze is directed to a method to allow efficient monitoring of whether a deposition process has produced acceptable layers, not controlling a deposition process based upon the determined weight or mass of the process layer.

In rejecting claims 9 and 28, the Examiner stated that Figure 3 of Dietze shows that the deposition process stops if the weight of the layer is within tolerance. Applicants respectfully disagree. In Dietze, the process layers have already been formed prior to going through the weighing process described in Dietze. This is clear from the express disclosure of Dietze which states that, once steps 112-116 have been performed, layers are deposited on other substrates and the masses of those layers are determined using the previously described method. Col. 4, ll. 10-12. Thus, by virtue of its express disclosure, Dietze does not disclose a step of stopping a deposition process based upon the determined weight.

In rejecting claims 10-11 and 29-30, the Examiner stated that Dietze discloses depositing an "additional layer in additional time" based on the mass of the layer, citing col. 4, ll. 12-15.

Office Action at page 3. Applicants again respectfully disagree. At no point does Dietze suggest the step of depositing additional material on a wafer based upon the measured or determined mass of the layer. Again, Dietze simply looks at the wafers after the layers have been formed to determine whether the mass of the wafers fall within some pre-established guidelines.

In rejecting claims 12-31, the Examiner stated that Dietze discloses the step of correlating process parameters with measurable weight (citing Figure 3), which according to the Examiner reads on adjusting the parameters of a deposition process based upon the determined weight. Applicants respectfully disagree with the Examiner's reading of Dietze. Dietze does disclose that the thickness and uniformity of a test layer is determined for a given deposition process. Col. 3, ll. 58-59. Dietze also discloses determining the mass or weight of a layer produced by such a given process. Again, Dietze does not disclose any aspect of the step of adjusting one or more parameters of a deposition process based upon the determined weight.

For at least the aforementioned reasons, it is respectfully submitted that independent claims 1, 13 and 23 are not anticipated by Dietze. Moreover, it is respectfully submitted that claims 1-16 and 18-31 are not obvious in view of Dietze and Lynch. Lynch is understood to be directed to a method of bulge testing thin films of material. Abstract. Lynch certainly does not describe any aspect of controlling a deposition process for any reason. Thus, Lynch cannot cure the fundamental deficiencies set forth in the primary reference, Dietze. Accordingly, any obviousness rejection based upon Dietze and Lynch would be legally improper as such a combination would fail to disclose all of the claim limitations. Moreover, there appears to be no motivation in the art of record to combine the art in the manner suggested by the Examiner so as to arrive at Applicants' invention. As described previously, Dietze describes a process wherein a "go-no go" type inspection regime is performed to determine whether previously formed layers

of material are within previously established acceptable guidelines for the weight or mass of such layers. Lynch is directed to a process of testing various material properties of very thin films by a bulge testing technique. It is unclear to the undersigned how one skilled in the art would seek to combine the teachings of both these references to arrive at Applicants' claimed inventions. A recent Federal Circuit case makes it crystal clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35. It is respectfully submitted that any attempt to assert that the inventions defined by claims 1-16 and 18-31 are obvious in view of Dietze and Lynch must necessarily be based upon an improper use of hindsight using Applicants' disclosure as a roadmap. Thus, it is respectfully submitted that claims 1-16 and 18-31 are in condition for immediate allowance.

Claims 5-7 were rejected under 35 U.S.C. § 103 based upon Dietze and Lynch. Office Action at page 4. In making the rejection, the Examiner stated that "Lynch discloses a method for performing bulge testing" of films that comprises the step of "providing a pressure sensor that senses a pressure induced as a result of forming a layer and calculating the weight based upon the sensed pressure." Office Action at page 4 (emphasis added). Applicants respectfully disagree with this statement. The Examiner made a similar statement with respect to the rejections of claims 13-16 and 18-22. Office Action at page 5. Applicants respectfully disagree with the Examiner regarding this aspect of the disclosure of Lynch. In Lynch (Figure 5(a)), a system is disclosed for bulge testing a thin film. Col. 10, ll. 1-2. The system includes a pressurization system 51 for applying fluid (gaseous or liquid) pressure within the cavity 53 and



thus to the bottom side of the flexible portion 68 (not indicated on Figure 5(a)) of the membrane structure 47. Col. 10, ll. 10-13. Lynch also discloses that a pressure sensor 51 (redundant number) is in operative communication with the cavity 53 to monitor pressure therein. Col. 10, ll. 16-21. Thus, the pressure sensor is used to monitor the pressure created within the cavity 53 by the pressurization system. It does not monitor a pressure induced as a result of forming a layer of material. This is clear from the disclosure of Lynch. Thus, it is respectfully submitted that the Examiner's rejections of claims 5-7, 13-16 and 18-22 were improper for at least these additional reasons.

In view of the foregoing, it is respectfully submitted that all pending claims are in condition for immediate allowance. The Examiner is invited to contact the undersigned attorney at (713) 934-4055 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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